PART I
MITIGATION AND MONITORING GUIDELINES

PURPOSE OF THESE GUIDELINES

Under existing law, the U.S. Army Corps of Engineers (Corps) may require compensatory mitigation to replace aquatic resource functions that are unavoidably lost or adversely affected by authorized activities. The purpose of compensatory mitigation is to develop long-term, self-sustaining wetlands and other aquatic resources that are not dependent on human intervention after the establishment period.

This document defines mitigation requirements and policy, and is for use by applicants in the preparation of compensatory mitigation and monitoring plans when the Corps determines that mitigation is appropriate and necessary for a particular project.

This document is in five parts, incorporating the latest guidance and science from Corps Headquarters and the National Academy of Science. Part I discusses the policy and procedures for the Albuquerque District Regulatory Branch. Part II is a Compensatory Mitigation Plan Checklist and Detailed Outline to be used in the development of compensatory mitigation and monitoring plans. Part III is a recommended outline for Monitoring Reports. Part IV is the Corps' summary of recommendations of the National Academy of Science report entitled *"Compensating for Wetland Losses Under the Clean Water Act"*. Part V is the Corps' Regulatory Guidance Letter 02-2, entitled *"Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899"*.

POLICY

The goal of the Clean Water Act and the 404(b)(1) Guidelines is to maintain, restore, and enhance the physical, chemical, and biological integrity of the Nation's waters. The Corps strives to avoid and minimize adverse impacts to waters of the United States, and to achieve the goal of no overall net loss of wetland functions and values.

The 1990 Memorandum of Agreement between the Corps and the Environmental Protection Agency requires replacement of aquatic functions that are unavoidably lost to a permitted activity. This requirement was reinforced by Regulatory Guidance Letter (RGL) 02-2, entitled *"Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899"* (see Part V).

The Albuquerque District is committed to improving the success of compensatory mitigation. To attain this goal, applicants are strongly recommended to use the **Compensatory Mitigation Plan Checklist and Detailed Outline (Part II)** to develop specific compensatory mitigation and monitoring plans. The **Outline for Monitoring Reports (Part III)** should be used to ensure that

monitoring reports contain the information necessary to determine the progress of the mitigation. We also recommend that the **guidelines summarizing the National Research Council (NRC) report entitled, *"Compensating for Wetland Losses Under the Clean Water Act"* (Part IV)** and the guidance contained in **RGL 02-2 (Part V)** be applied to assist in planning and implementing successful, ecologically self-sustaining wetland and stream mitigation projects. This document can be viewed on our website at: www.spa.usace.army.mil/reg.

INCORPORATING THE MITIGATION PLAN INTO THE PERMIT PROCEDURE

Pre-Application Coordination: Early coordination regarding impact avoidance, minimization, and mitigation should be done prior to submitting an application or request for nationwide permit verification. Applicants should contact the Corps prior to initiation of site selection and mitigation plan development, as mitigation requirements will be project specific.

Individual Permit: The Section 404(b)(1) Guidelines limit the issuance of a permit to the least environmentally damaging, practicable alternative that is not contrary to the public interest. In other words, no discharge of fill material will be permitted if there is a practicable alternative that would have less adverse impact on the aquatic ecosystem, if the alternative does not have other significant adverse environmental consequences. If the applicant has complied with the Guidelines by first evaluating alternatives that would avoid impacts, and has then taken appropriate and practicable steps to minimize adverse impacts to the maximum extent practicable, then compensatory mitigation is required for the unavoidable impacts.

If the applicant is proposing mitigation, it is preferable that a preliminary mitigation and monitoring plan be submitted with the application. A detailed preliminary mitigation plan should generally not be completed until jurisdictional maps of the project area and proposed mitigation area have been accepted by the Corps, and the area of fill to be mitigated has been identified. The final mitigation plan will usually be submitted following the public comment period and Corps review of the preliminary plan.

Nationwide / Regional General Permit Program: Along with a request for verification that a project is authorized under a nationwide or general permit, the permittee should include a discussion of how aquatic resource impacts were avoided and minimized. In addition, a detailed mitigation and monitoring plan should generally be submitted with the request for verification.

Submittal of Mitigation and Monitoring Plan: **The Compensatory Mitigation Plan Checklist (Part II) must be included with the preliminary and final mitigation and monitoring plan package.** Refer to the Compensatory Mitigation Plan Checklist and Detailed Outline for document format information.

The final submittal of a compensatory mitigation and monitoring plan should be in a single document. It should contain up-to-date versions of all materials, even if other versions were submitted earlier in the application process.

MITIGATION GUIDELINES

The Compensatory Mitigation Plan Checklist and Detailed Outline (Part II) describes the primary considerations to be taken into account when developing wetland or stream mitigation and monitoring plans. **All items on the Checklist should be included in the mitigation and monitoring plan, or there should be an explanation as to why the item is not appropriate to include.**

In general, the level of information provided in the mitigation plan should be commensurate with the potential impact to aquatic resources. The Corps will work with the applicant to determine the appropriate amount and type of mitigation and the level of documentation required for each project. The applicant should also apply the recommendations and concepts contained in the NRC guidelines summary (Part IV) and RGL 02-2 (Part V) and to the planning and implementation of mitigation projects.

The Corps recognizes that on-site compensatory mitigation is not always practicable or best for the aquatic resources, and is striving to transition to a system-oriented or watershed approach to mitigation decisions. Mitigation plans should describe how the mitigation project will contribute to the specific aquatic resource needs of the impacted watershed. Watersheds will be identified using the U.S. Geologic Survey's Hydrologic Unit Codes (HUC).

The applicant should consider the aquatic functions lost at the impact area when addressing compensatory mitigation requirements. At this time, there is no approved methodology for assessing aquatic functions in the Albuquerque District. Until such time that methodologies have been developed, tested and approved, the Regulatory Branch will continue to utilize the best professional judgment of its project managers and the resource agencies to make mitigation decisions. To assist in our evaluation, the applicant may engage a qualified environmental sciences professional familiar with aquatic systems to provide a summary of the functions and values of waters of the U.S.

Replacement acreage will be determined based on functions and values of the aquatic resources that will be eliminated or degraded, the temporal loss that will occur to those functions, the functions and values of the proposed mitigation site, and the expected degree of success of the proposed mitigation. To achieve the goal of no net loss of aquatic functions and values, replacement acreage may be greater than the acreage lost. Establishment and maintenance of buffers may be required to ensure that the overall mitigation project performs as expected.

To the extent practicable, wetlands that are not authorized for fill activities will be excluded from building lots in order to prevent predictable, unauthorized impacts. If the Corps determines that it is not practicable to revise lot layouts to exclude wetlands, then compensatory mitigation may be required to replace the aquatic functions and values that will be lost as a result of the development.

At the option of the Corps, placement of signs around the mitigation area boundaries may be required to identify the site as a mitigation or conservation area.

The mitigation plan will identify the party(s) responsible for accomplishing, maintaining, and monitoring the mitigation site. It is the sole responsibility of the applicant to design, construct, maintain and monitor the mitigation site.

Compensation for impacts to waters of the U.S. should normally be completed in advance of, and no later than concurrently with, the impact. If it is not feasible to complete the mitigation concurrent with authorized impacts, compensatory mitigation may be accomplished after project construction as described in RGL 02-2, paragraph 2.n. (see Part V).

PERFORMANCE STANDARDS AND MONITORING

The mitigation plan should include a thorough monitoring plan as part of an adaptive management program that provides early indication of potential problems and direction for corrective actions. The NRC report entitled, *Compensating for Wetland Losses Under the Clean Water Act* (2001) (Part IV), states:

> The monitoring of wetland structure, processes, and function from the onset of wetland restoration or creation can indicate potential problems. Process monitoring (e.g., water-level fluctuations, sediment accretion and erosion, plant flowering, and bird nesting) is particularly important because it will likely identify the source of a problem and how it can be remedied. Monitoring and control of nonindigenous species should be a part of any effective adaptive management program. . . . Simply documenting the structure (vegetation, sediments, fauna, and nutrients) will not provide the knowledge and guidance required to make adaptive "corrections" when adverse conditions are discovered.

It is essential that mitigation and monitoring plans contain written performance standards for assessing whether mitigation is achieving planned goals and functions. Performance standards for a specific project are measurable, external attributes that are related to the specific target functions being replaced, e.g., water quality improvement, wildlife habitat, shoreline stabilization, flood attenuation and abatement, etc. Target functions and corresponding performance standards are determined on a case-by-case basis, and are influenced by the extent of impacts at the project site and what the mitigation site can support.

The mitigation and monitoring plan will identify how the performance standards will be measured and reported to the Corps on an annual or periodic basis. Monitoring reports should include a discussion of biotic and abiotic processes; measures of hydrology, vegetation (including nonindigenous species), soils, fauna, and nutrients; photographs from fixed locations; and recommended remedial measures to achieve the performance standards. **The recommended Outline for Monitoring Reports is contained in Part III.**

Monitoring will typically be required for five years, or upon successful achievement of the performance standards, whichever occurs first. Monitoring will not be less than three growing seasons. Success of the mitigation area, without human intervention, should be demonstrated for two consecutive years, once the success criteria have been met.

REMEDIAL ACTIONS

Remedial measures may be required if all or any portion of the annual performance criteria are not met in any year, or if the final performance standards are not met. The responsible party shall prepare an analysis of the cause(s) of failure and, if determined necessary by the Corps, propose remedial action for approval. If the mitigation site has not met the performance criteria, the responsible party's maintenance and monitoring obligations continue until the Corps gives final project confirmation. In the alternative, the Corps may require that a new mitigation site be identified and/or mitigation plan developed.

SITE PROTECTION AND MAINTENANCE

Mitigation plans should include a written description of the legal means for protecting and maintaining the mitigation area(s). All components of the mitigation, including wetlands, uplands, riparian areas, or other aquatic resources should be permanently protected, in most cases, with appropriate legal instruments, e.g., conservation easements, deed restrictions, transfer of title to Federal or state resource agencies or non-profit conservation organizations. In no case will the real estate instrument require a Corps official's signature.

COMPLIANCE ASSURANCES

Mitigation plans will identify the party responsible for providing and managing any financial assurances and contingency funds set aside for remedial measures to ensure mitigation success. An applicant may be required to provide financial assurances to ensure attainment of the final mitigation performance standards. Financial assurances may be in the form of letters of credit, performance bonds, escrow accounts, irrevocable trusts, or other appropriate legal documents.

The monetary value of the financial guarantee will be determined by the Corps, based on the applicant's estimate of the total cost of the proposed mitigation, maintenance and monitoring. The estimate shall include, at a minimum, the costs associated with site acquisition and preparation, vegetation establishment, operation and maintenance, contingency measures, and the generation of monitoring reports. To cover Corps supervisory and administrative costs that may be incurred, the financial assurance should include an additional 15% minimum of the estimated cost of construction. The financial assurance for the maintenance phase should equal not less than 30% of the estimated cost of construction.

USEFUL REFERENCES

National Research Council. 2001. Compensating for Wetland Losses Under the Clean Water Act. National Academy Press. Washington, D.C. 348 pp.

USACE. January 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army Environmental Laboratory. Technical Report Y-87-1.

USACE. 2002. Regulatory Guidance Letter 02-2. Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.USACE Engineer Research and Development Center. July 2000. Installing Monitoring Wells / Piezometers in Wetlands. ERDC TN-WRAP-00-02. http://www.wes.army.mil/el/wrap/pdf/tnwrap00-2.pdf.

USDA. October 1998. Stream Corridor Restoration Principles, Processes, and Practices. Federal Interagency Stream Corridor Restoration Working Group. http://www.usda.gov/stream_restoration/newgra.html

In addition, the USACE Engineer Research and Development Center website at http://www.erdc.usace.army.mil/ contains numerous publications and technical papers on wetlands and streams.

PERSONS TO CONTACT WITH QUESTIONS

For answers to questions regarding the interpretation of these guidelines or acceptable mitigation for a specific project, contact a project manager within the Regulatory Branch of the Albuquerque District.